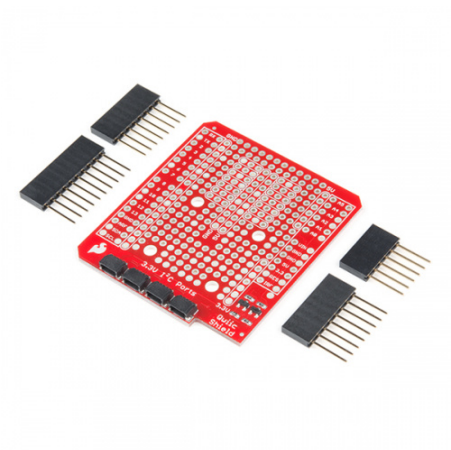
Qwiic Shield for Arduino & Photon Hookup Guide

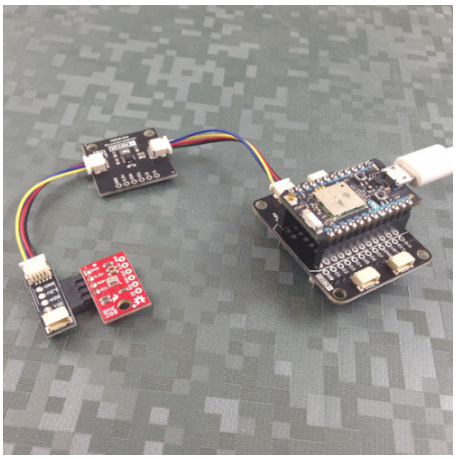
Introduction

The Qwiic Shield (for Arduino or Particle Photon) is the first step in getting acquainted with SparkFun's Qwiic connect ecosystem. It connects the I²C bus (GND, 3.3V, SDA, and SCL) on your Arduino or Photon board to a series of SparkFun Qwiic connectors. The board already has the circuitry to convert the 5V given to the 3.3V required by I²C boards in our Qwiic ecosystem. The Arduino shield also has holes for mounting Qwiic boards. Since the Qwiic system allows for daisy chaining (as long as your devices are on different addresses) you can stack as many sensors as you'd like to create a tower of sensing power!



SparkFun Qwiic Shield for Arduino

DEV-14352



Qwiic Shield for Photon
SPX-14202

Product Showcase: Qwiic Shield

Required Materials

To follow along with this hookup guide, you will need any Arduino with the R3 header footprint, or a Photon Board. This includes the Uno, RedBoard and many other Arduino compatible boards! Here are just a few of the compatible boards.

Arduino Uno - R3
DEV-11021

SparkFun RedBoard - Programmed with Arduino
DEV-13975

Arduino Mega 2560 R3
DEV-11061

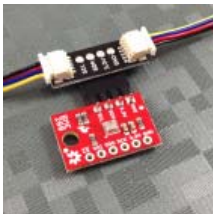
Particle Photon (Headers)
WRL-13774

Now you probably didn't buy the Qwiic shield if you didn't have any Qwiic products to use with it, right? Well, if you don't have any Qwiic products, the following might not be a bad place to start.

SparkFun Environmental Combo Breakout - CCS811/BME280 (Qwiic)
SEN-14348

Qwiic Visible Spectral Sensor - AS7262
SPX-14290

Qwiic GPS - Titan X1
SPX-14312
★★★★☆ | Retired



Qwiic Adapter
SPX-14237

Finally, you'll need our handy Qwiic connectors to easily connect sensors to your Qwiic shield. Below are a few options.

Qwiic Cable - 500mm
PRT-14429

Qwiic Cable - 50mm
PRT-14426

Qwiic Cable - 100mm
PRT-14427

Qwiic Cable - 200mm
PRT-14428

Required Tools

You will need a soldering iron, solder, and general soldering accessories to solder the header pins to the Qwiic shield for Arduino.

Soldering Iron - 30W (US, 110V)
TOL-09507

Solder Lead Free - 15-gram Tube
TOL-09163

Suggested Reading

If you aren't familiar with our new Qwiic system, we recommend reading here for an overview. We would also recommend taking a look at the following tutorials if you aren't familiar with them.

How to Solder: Through-Hole Soldering
This tutorial covers everything you need to know about through-hole soldering.

Arduino Shields
All things Arduino Shields. What they are and how to assemble them.

I2C

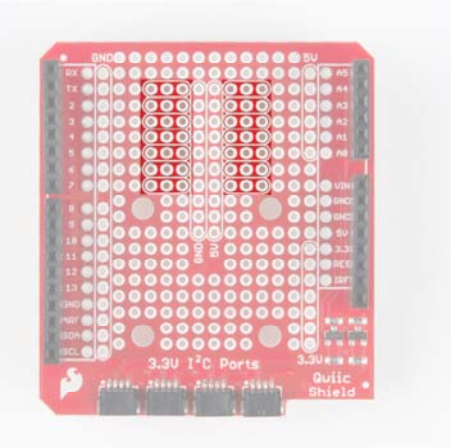
An introduction to I2C, one of the main embedded communications protocols in use today.

Hardware Overview

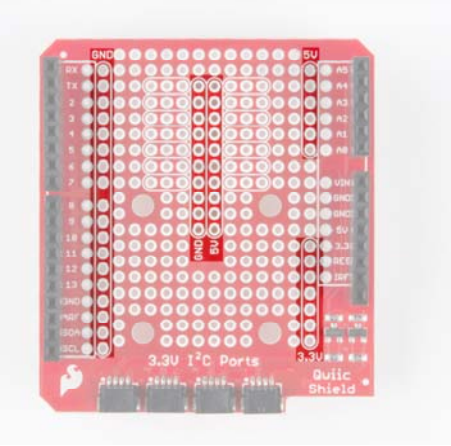
Qwiic Shield for Arduino

The Qwiic Shield's have 4x Qwiic connect ports, all on the same I²C bus. Logic level converters are included for the Qwiic connect port's SDA and SCL lines so you do not have to worry about using the Qwiic system with 5V (or 3.3V) devices.

In addition to this, a large prototyping area is included. As shown in the image below, the Qwiic shield for Arduino has a few neat features such as a few 3-by-1 rails to help with prototyping.



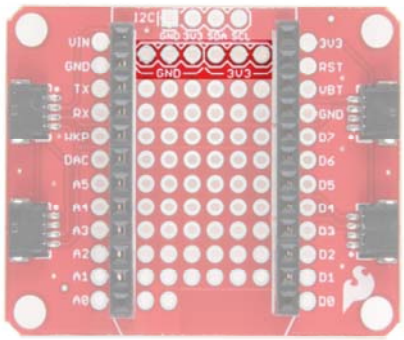
There are also buses for ground, 5V and 3.3V on the shield for Arduino outlined below.



The headers also allow for every pin on the microcontroller of your choice to still be accessed through the female headers.

Qwiic Shield for Photon

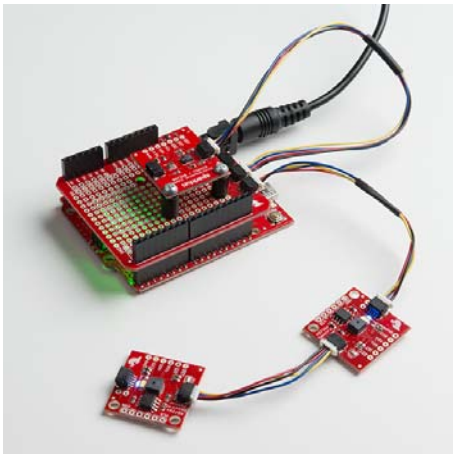
The Qwiic shield for the Particle Photon also has buses for 3.3V and ground. However, they are much smaller.



Hardware Assembly

To get started with your Qwiic shield or Arduino, all you'll need to do is solder on headers. For a detailed description of how to do this as well as more information on Arduino shields, simply check out our Arduino shield tutorial. It'll get you going with attaching those headers to your shield properly.

Once you've attached headers to your Qwiic Shield for Arduino, you're ready to plug it into your Qwiic enabled board of choice. If you need to mount a Qwiic sensor, just grab a few standoffs and screws. Plug in any Qwiic enabled board and get going!



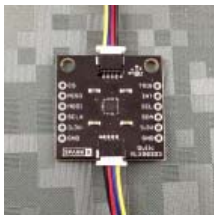
Resources and Going Further

For more information, check out the resources below:

- Qwiic Shield for Arduino Schematic (PDF)
- Qwiic Shield for Arduino Eagle Files (ZIP)
- Product Showcase: Qwiic Shield for Arduino
- Qwiic System Landing Page
- Qwiic Shield For Arduino GitHub Repository

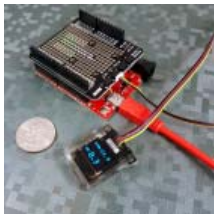
Now that you have your Qwiic shield ready to go, it's time to check out some of SparkX's Qwiic enabled products, many of which are on their way to becoming good old fashioned SparkFun products.

Qwiic Micro OLED
SPX-14269



Qwiic Magnetometer - MLX90393
SPX-14294

Qwiic Mux - PCA9548A
SPX-14293



Qwiic Water-Resistant OLED
SPX-14287

But I Already Have Sensors!

If you already have a handful of SparkFun sensors and parts? SparkFun has been putting our standard GND/VCC/SDA/SCL pinout on all our I²C boards for many years. This makes it possible to attach a Qwiic Adapter that will get your SparkFun I²C sensor or actuator onto the Qwiic system.

Here is the list of the boards that have the standard I²C pinout and will work with the Qwiic adapter board:

- 9DoF Stick IMU - LSM9DS1
- 9DoF IMU - MPU-9250
- 6DoF IMU - LSM303C
- 6DoF IMU - LSM6DS3
- Triple Axis Accelerometer - LIS3DH
- Triple Axis Magnetometer - MAG3110
- Triple Axis Magnetometer - MLX90393
- Compass Module - HMC6343
- Atmospheric Sensor - BME280
- Barometric Pressure Sensor - MS5803-14BA
- Barometric Pressure Sensor - T5403
- Humidity and Temperature Sensor - Si7021
- Digital Temperature Sensor - TMP102
- Particle Sensor - MAX30105
- Air Quality Sensor - CCS811
- ToF Range Finder - VL6180
- Haptic Motor Driver - DRV2605L
- Micro OLED Display
- RGB and Gesture Sensor - APDS-9960
- RGB Light Sensor - ISL29125
- LED Driver - LP55231
- DAC Breakout - MCP4725
- 16 Output I/O Expander - SX1509
- Battery Babysitter - BQ24075